

1 WHAT WE CLAIM IS:

2 1. A scheduling engine for optimally scheduling  
3 the allocation of a set service providers to a defined  
4 set of service points, comprising:

5 a service point mechanism for collecting and  
6 processing a plurality of service point data  
7 parameters, said service point data parameters being  
8 not necessarily independent from one another;

9 a service provider mechanism for collecting and  
10 processing a plurality of service provider data  
11 parameters, said service point data parameters being  
12 not necessarily independent from one another;

13 a generic multi-layer scheduling mechanism for  
14 generating allocation schedules for allocating the set  
15 of service providers to the set of service points, said  
16 generic multi-layer scheduling mechanism employing a  
17 heuristic algorithm for creating an objective function  
18 relating to said plurality of service point data  
19 elements and said plurality of service provider data  
20 elements and generating therefrom said optimal  
21 allocation schedule.

1 2. The scheduling engine of Claim 1, wherein  
2 said generic multi-layer scheduling mechanism further  
3 comprises instructions for successively proceeding  
4 through increasingly optimal allocation schedules until  
5 a final optimal allocation schedule results.

1 3. The scheduling engine of Claim 1, wherein  
2 said generic multi-layer scheduling engine further  
3 comprises a genetic analysis mechanism for testing  
4 successive allocation schedules for verifying

5 improvement over previously generated allocation  
6 schedules.

1 4. The scheduling engine of Claim 3, further  
2 comprising a variable scoring model for changing said  
3 successive allocation schedules for accommodating  
4 different customer business aspects.

1 5. The scheduling engine of Claim 4, wherein  
2 said genetic analysis mechanism requires only two  
3 solutions for comparing to improve over previously  
4 generated allocation schedules independent of the type  
5 of employed heuristic algorithm.

1 6. The scheduling engine of Claim 1, wherein  
2 said genetic multi-layer scheduling mechanism further  
3 comprises a plurality of meta-heuristics for  
4 successively testing the optimality of a population of  
5 solutions for proceeding towards an optimal solution  
6 independent of linearity constraints.

1 7. A scheduling engine for processing a  
2 plurality of scheduling problems, comprising:  
3 instructions for defining a set of inputs, control  
4 parameters, and mathematical cost models;  
5 instructions for generating a set of initial  
6 starting conditions;  
7 a scoring cost model evaluator for generating the  
8 state of an elite solution and guiding operations of  
9 said heuristic algorithm; and  
10 said scoring model evaluation further for guiding  
11 the operation on the population of solutions regardless  
12 of nonlinearity or dependence among said set of inputs,  
13 control parameters, and mathematical cost models.

1           8. The scheduling engine of Claim 7, wherein  
2 said instructions for generating said set of initial  
3 starting conditions further comprises instructions for  
4 randomly generating said set of initial starting  
5 conditions.

1           9. The scheduling engine of Claim 7, wherein  
2 said instructions for generating said set of initial  
3 starting conditions further comprises instructions for  
4 receiving said set of initial starting conditions from  
5 an associated heuristic solution.

1           10. The scheduling engine of Claim 7, wherein  
2 said scoring model evaluator further comprises  
3 instructions for iteratively modifying said set of  
4 inputs for converging to an optimal solution.

1           11. A method for scheduling engine for optimally  
2 scheduling the allocation of a set service providers to  
3 a defined set of service points, comprising the steps  
4 of:

5           collecting and processing a plurality of service  
6 point data parameters, said data parameters being not  
7 necessarily independent from one another;

8           collecting and processing a plurality of service  
9 provider data parameters, said service point data  
10 parameters being not necessarily independent from one  
11 another; and

12           generating allocation schedules for allocating the  
13 set of service providers to the set of service points,  
14 said generic multi-layer scheduling mechanism employing  
15 a heuristic algorithm for creating an objective  
16 function relating to said plurality of service point

17 data elements and said plurality of service provider  
18 data elements and generating therefrom said optimal  
19 allocation schedule.

1           12. The method of Claim 11, wherein said generic  
2 step further comprises the step of successively  
3 proceeding through increasingly optimal allocation  
4 schedules until a final optimal allocation schedule  
5 results.

1           13. The method of Claim 11, wherein further  
2 comprising the step of testing successive allocation  
3 schedules to verify improvement over previously  
4 generated allocation schedules.

1           14. The method of Claim 13, further comprising  
2 the step of changing said successive allocation  
3 schedules for accommodating different customer business  
4 aspects.

1           15. The method of Claim 14, wherein said changing  
2 step requires only two solutions for comparing to  
3 improve over previously generated allocation schedules  
4 independent of the type of employed heuristic  
5 algorithm.

1           16. The method of Claim 11, further comprising  
2 the step of successively testing the optimality of a  
3 population of solutions for proceeding towards an  
4 optimal solution independent of linearity constraints.

1           17. A method algorithm for processing a plurality  
2 of scheduling problems comprising the steps of:  
3 defining a set of inputs, control parameters, and  
4 mathematical cost models;

5           generating a set of initial starting conditions;  
6           generating the state of an elite solution and  
7       guiding operations of said heuristic algorithm using a  
8       scoring cost evaluator; and  
9           guiding the operation on the population of  
10       solutions regardless of nonlinearity or departure among  
11       said set of inputs, control parameters, and  
12       mathematical cost models using a scoring cost  
13       evaluator.

1           **18.** The method of Claim 17, wherein generating  
2       said set of initial starting conditions step further  
3       comprises the step of randomly generating said set of  
4       initial starting conditions.

1           **19.** The method of Claim 17, wherein generating  
2       said set of initial starting conditions step further  
3       comprises the step of receiving said set of initial  
4       starting conditions from an associated heuristic  
5       solution.

1           **20.** The method of Claim 17, scoring model  
2       evaluator further comprising the step of iteratively  
3       modifying said set of inputs for converging to an  
4       optimal solution.